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From the INTERNATIONAL BUREAU

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NOTIFICATION OF TRANSMITTAL  
OF COPIES OF TRANSLATION  
OF THE INTERNATIONAL PRELIMINARY REPORT  
ON PATENTABILITY  
(CHAPTER I OR CHAPTER II  
OF THE PATENT COOPERATION TREATY)  
(PCT Rule 72.2)

To:

**10/528369**

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Date of mailing ( <i>day/month/year</i> ) 23 June 2005 (23.06.2005)	
Applicant's or agent's file reference PCT-PNG02017	<b>IMPORTANT NOTIFICATION</b>
International application No. PCT/JP2003/011968	International filing date ( <i>day/month/year</i> ) 19 September 2003 (19.09.2003)
Applicant JAPAN SCIENCE AND TECHNOLOGY AGENCY et al	

**1. Transmittal of the translation to the applicant.**

The International Bureau transmits herewith a copy of the English translation made by the International Bureau of the international preliminary examination report established by the International Preliminary Examining Authority.

**2. Transmittal of the copy of the translation to the elected Offices.**

The International Bureau notifies the applicant that copies of that translation have been transmitted to the following elected Offices requiring such translation:

EP, KR

The following elected Offices, having waived the requirement for such a transmittal at this time, will receive copies of that translation from the International Bureau only upon their request:

US

**3. Reminder regarding translation into (one of) the official language(s) of the elected Office(s).**

The applicant is reminded that, where a translation of the international application must be furnished to an elected Office, that translation must contain a translation of any annexes to the international preliminary examination report.

It is the applicant's responsibility to prepare and furnish such translation directly to each elected Office concerned (Rule 74.1). See Volume II of the PCT Applicant's Guide for further details.

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Translation

PATENT COOPERATION TREATY

PCT/JP2003/011968



# PCT

## INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY (Chapter II of the Patent Cooperation Treaty)

(PCT Article 36 and Rule 70)

Applicant's or agent's file reference PCT-PNG02017	FOR FURTHER ACTION See Form PCT/IPEA/416	
International application No. PCT/JP2003/011968	International filing date (day/month/year) 19 September 2003 (19.09.2003)	Priority date (day/month/year) 20 September 2002 (20.09.2002)
International Patent Classification (IPC) or national classification and IPC H01J 63/06		
Applicant JAPAN SCIENCE AND TECHNOLOGY AGENCY		

- This report is the international preliminary examination report, established by this International Preliminary Examining Authority under Article 35 and transmitted to the applicant according to Article 36.
- This REPORT consists of a total of 6 sheets, including this cover sheet.
- This report is also accompanied by ANNEXES, comprising:
  - ☒ (sent to the applicant and to the International Bureau) a total of 7 sheets, as follows:
    - ☒ sheets of the description, claims and/or drawings which have been amended and are the basis of this report and/or sheets containing rectifications authorized by this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions).
    - ☐ sheets which supersede earlier sheets, but which this Authority considers contain an amendment that goes beyond the disclosure in the international application as filed, as indicated in item 4 of Box No. I and the Supplemental Box.
  - ☐ (sent to the International Bureau only) a total of (indicate type and number of electronic carrier(s)) \_\_\_\_\_, containing a sequence listing and/or tables related thereto, in computer readable form only, as indicated in the Supplemental Box Relating to Sequence Listing (see Section 802 of the Administrative Instructions).

- This report contains indications relating to the following items:

- ☒ Box No. I Basis of the report
- ☐ Box No. II Priority
- ☐ Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- ☐ Box No. IV Lack of unity of invention
- ☒ Box No. V Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- ☐ Box No. VI Certain documents cited
- ☐ Box No. VII Certain defects in the international application
- ☒ Box No. VIII Certain observations on the international application

Date of submission of the demand 13 February 2004 (13.02.2004)	Date of completion of this report 14 September 2004 (14.09.2004)
Name and mailing address of the IPEA/JP	Authorized officer
Facsimile No.	Telephone No.

## INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

International Application No.

PCT/JP2003/011968

## Box No. I Basis of the report

1. With regard to the language, this report is based on the international application in the language in which it was filed, unless otherwise indicated under this item.

- ☐ This report is based on translations from the original language into the following language \_\_\_\_\_, which is language of a translation furnished for the purpose of:
- ☐ international search (under Rules 12.3 and 23.1(b))
  - ☐ publication of the international application (under Rule 12.4)
  - ☐ international preliminary examination (under Rules 55.2 and/or 55.3)

2. With regard to the elements of the international application, this report is based on *(replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report)*:

- ☐ The international application as originally filed/furnished
- ☒ the description:
- pages \_\_\_\_\_ 1, 5-13, 15, 16, 18-21 \_\_\_\_\_, as originally filed/furnished
- pages\* \_\_\_\_\_ 2-4, 14, 17 \_\_\_\_\_ received by this Authority on 07 September 2004 (07.09.2004)
- pages\* \_\_\_\_\_ received by this Authority on \_\_\_\_\_
- ☒ the claims:
- pages \_\_\_\_\_ 2-8, 13, 14 \_\_\_\_\_, as originally filed/furnished
- pages\* \_\_\_\_\_, as amended (together with any statement) under Article 19
- pages\* \_\_\_\_\_ 1, 11, 12, 15, 16 \_\_\_\_\_ received by this Authority on 07 September 2004 (07.09.2004)
- pages\* \_\_\_\_\_ received by this Authority on \_\_\_\_\_
- ☒ the drawings:
- pages \_\_\_\_\_ 1/5-5/5 \_\_\_\_\_, as originally filed/furnished
- pages\* \_\_\_\_\_ received by this Authority on \_\_\_\_\_
- pages\* \_\_\_\_\_ received by this Authority on \_\_\_\_\_
- ☐ a sequence listing and/or any related table(s) – see Supplemental Box Relating to Sequence Listing.

3. ☒ The amendments have resulted in the cancellation of:

- ☐ the description, pages \_\_\_\_\_
- ☒ the claims, Nos. \_\_\_\_\_ 9, 10 \_\_\_\_\_
- ☐ the drawings, sheets/figs \_\_\_\_\_
- ☐ the sequence listing (*specify*): \_\_\_\_\_
- ☐ any table(s) related to sequence listing (*specify*): \_\_\_\_\_

4. ☐ This report has been established as if (some of) the amendments annexed to this report and listed below had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2(c)).

- ☐ the description, pages \_\_\_\_\_
- ☐ the claims, Nos. \_\_\_\_\_
- ☐ the drawings, sheets/figs \_\_\_\_\_
- ☐ the sequence listing (*specify*): \_\_\_\_\_
- ☐ any table(s) related to sequence listing (*specify*): \_\_\_\_\_

\* If item 4 applies, some or all of those sheets may be marked "superseded."

## INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International Application No.

PCT/JF 03/11968

## V. Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

## 1. Statement

Novelty (N)	Claims	1-8, 11-16	YES
	Claims		NO
Inventive step (IS)	Claims		YES
	Claims	1-8, 11-16	NO
Industrial applicability (IA)	Claims	1-8, 11-16	YES
	Claims		NO

## 2. Citations and explanations

Document 1: JP 2-60988 A (Matsushita Electric Industrial Co., Ltd.), 1 March 1990

Document 2: JP 2001-357771 A (Matsushita Electric Industrial Co., Ltd.), 26 December 2001

Document 3: Yuko Sato, 2 others, "Kouhaikou Eu:Y<sub>2</sub>O<sub>3</sub> whisker no kouzou oyobi keikou tokusei," 21-seiki kinen, Dai 14-kai shuuki symposium kouen yokoushuu, Japan, The Ceramic Society of Japan, 26 September 2001, page 145

Document 4: WO 01/09914 A1 (Nanolight International Ltd.), 8 February 2001

Document 5: JP 2001-114600 A (Asahi Kasei Corp.), 24 April 2001

(All of these documents are cited in the international search report.)

Claims 1 to 8, 11 to 13, 15, and 16

Claims 1 to 8, 11 to 13, 15 and 16 do not involve an inventive step in the light of documents 1 to 3 and 5.

Document 2 (paragraphs [0041] to [0046], fig. 5) discloses a light-emitting element comprising a cold

cathode member, which is formed by growing ZnO whiskers on a substrate according to a vapor phase growth method, disposed so as to face an anode substrate on which is formed a fluorescent film.

Documents 3 and 5 disclose techniques for forming whiskers using CVD.

As disclosed in document 1, the use of zinc oxide whiskers as a fluorescent material is a known technique, and document 3 also suggests the use of metal oxide whiskers as a fluorescent material; thus, implementing metal oxide whiskers formed according to a CVD method, as disclosed in document 3, as the fluorescent film in the light-emitting element disclosed in document 1 would be obvious to a person skilled in the art.

Similarly, document 5 also discloses the use of an invention to which is attached an excitation source that irradiates the metal oxide with electrons, thereby exciting the electrons present in the metal oxide (paragraph [0035]), and indicates that a fluorescent display tube is one such use therefor (paragraph [0036]). In the light of these disclosures in document 5, implementing whiskers such as the ones disclosed in document 5 as the fluorescent film in the light-emitting element disclosed in document 1 would be obvious to a person skilled in the art.

Further, in the light of the whisker structures disclosed in detail in documents 1 and 5, the numerical limitations specified in claims 3 and 4 are not recognized as being especially significant.

As for claim 16, ZnO whiskers also emit light in the ultraviolet range.

#### Claim 14

Claim 14 does not involve an inventive step in the light of documents 1 to 5.

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

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Use in a light-emitting element of the type disclosed in document 4 is also not recognized as being an exceptional feature.

## VIII. Certain observations on the international application

The following observations on the clarity of the claims, description, and drawings or on the question whether the claims are fully supported by the description, are made:

In the invention described in claim 1, a light-emitting electrode and a cold cathode both comprise metal oxide whiskers.

Meanwhile, it is unclear whether the whiskers described in claims 2 to 7 are used to constitute a light-emitting electrode or a cold cathode.

However, taking into account the disclosures in the description and elsewhere, for the purposes of this international preliminary examination report, the inventions described in claims 2 to 7 are deemed to be the whiskers of the light-emitting electrode.